

Development of a Selenium Standard for the Open Waters of Great Salt Lake

Great Salt Lake Water Quality Studies



How did the selenium standard process get started?

Utah's Division of Water Quality was in the process of issuing a discharge permit when concerns were raised by stakeholders regarding potential effects of selenium on Great Salt Lake wildlife. While addressing these concerns we found:

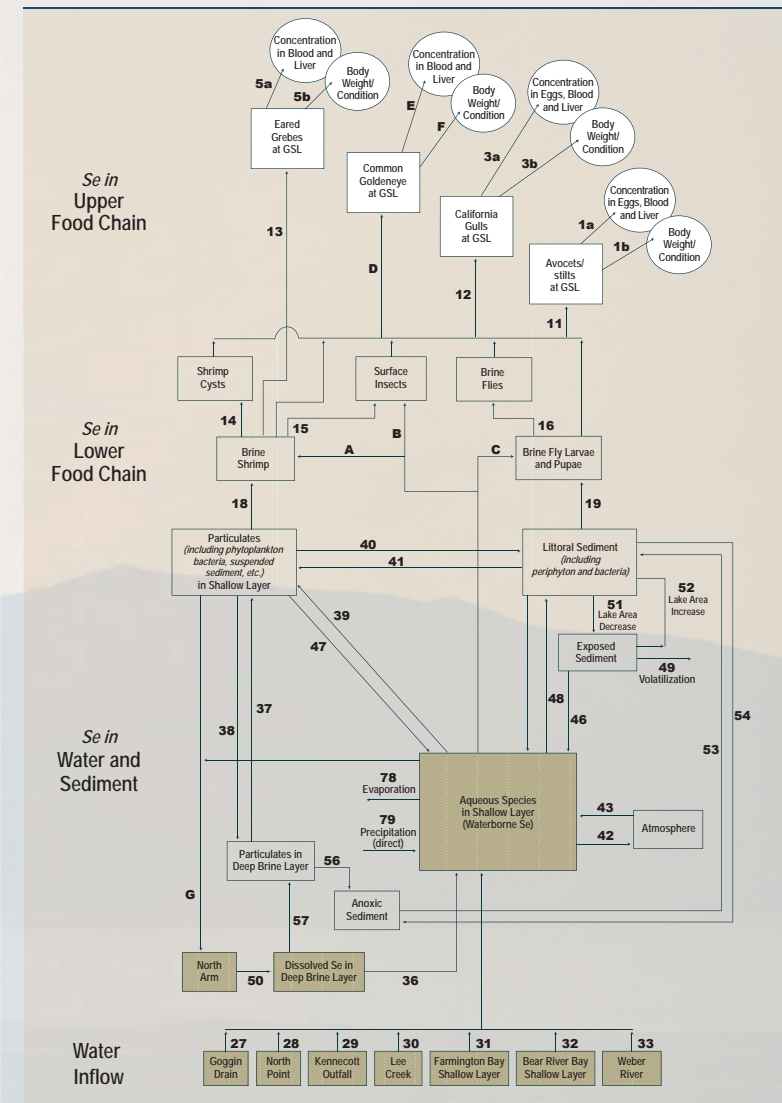
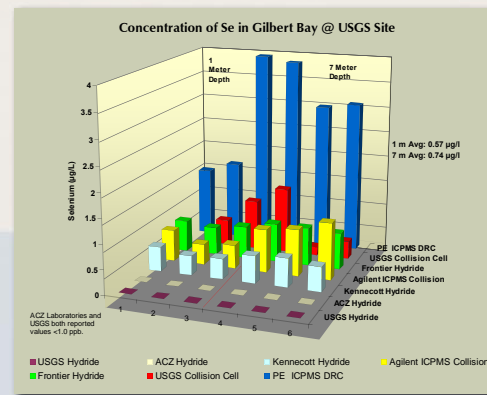
1. Selenium measurements in Great Salt Lake were highly variable and suspect. We did not know the concentration of selenium in Great Salt Lake.
2. Bioaccumulation of selenium through the food webs of highly saline lakes was not well understood.
3. The beneficial use designation for Great Salt Lake includes waterfowl and shorebirds. However, there are no bird/wildlife numeric criteria for selenium.



Great Salt Lake

What initial steps were taken?

1. Completed a round robin study to determine the best sampling and laboratory methods that would result in consistent and accurate selenium measurements in Great Salt Lake.
 - Seven laboratories participated using various methodologies
 - Results allowed the Science Panel to determine that only the HGAA method provide the confidence in results required at this time.
2. Developed a conceptual model to define the movement of selenium through the food web of Great Salt Lake
 - Local researchers developed a detailed conceptual model (Johnson et al. 2006) for selenium cycling in Great Salt Lake
 - A simplified version of the conceptual model was used to assist in defining research projects



Simplified Conceptual Model for Selenium Cycling